

the Survey Statistician

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INTERNATIONAL ASSOCIATION
OF SURVEY STATISTICIANS



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The Survey Statistician No. 86, July 2022

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Letter from the Editors



Dear readers,

We are happy to present the July 2022 issue of *The Survey Statistician*.

Before going any further in this letter, we cannot simply walk by the fact that the work of fellow survey statisticians has been interrupted in Ukraine since February 24, 2022, when Russia started the war against Ukraine. Not only is survey work compromised, but the population itself has been profoundly and cruelly affected. Population size is decreasing and unknown due to the fact that women and children have been leaving Ukraine, that people have been killed by bombs and rockets and that people have been lifted from Ukraine to Russia. Internet data collection is not adequate because a lot of infrastructure and residential buildings are destroyed and citizens are left without roof, computers, internet connection and some of them even without life. Face to face interviewing is not possible in large parts of the country because of the risks to both interviewers and respondents. Many enterprises are destroyed, agriculture fields are mined and so traditional ways to conducting surveys are no longer feasible. Some of the University teachers and students cannot be engaged into survey statistics studies and research because they are defending their country, and not all of them are still alive.

So, President Putin has to stop this war in Ukraine! Russian soldiers should be going home away from Ukraine. Destruction needs to cease for statisticians to carry on their work, for people to continue / go back to their normal life. In the meantime, let us all continue to support them to the best that we can.

This issue starts with the *Letter from the President* by Monica Pratesi, where she explains the importance of the IASS strategy and highlights the vision for our important association. It is followed by the *Report from the Scientific Secretary*, Giovanna Ranalli.

In the News and Announcement section, after the announcement of an award and of the World Statistics Congress 2023, a tribute is paid to two giants of the survey world: Fred Smith and Chris Skinner who passed away no so long ago and for whom a conference took place in their honour.

In the Ask-the-Experts section, Natalie Shlomo from the Social Statistics Department, School of Social Sciences at the University of Manchester, UK explains how to measure disclosure risk in microdata. She describes the two types of disclosure risks (identity and attribute disclosure) and goes on to state how this applies also to synthetic data and that there still development needed in this area. In the New and Emerging section, Patrick Krennmair, Nora Würz from Freie Universität Berlin and Timo Schmid from Otto-Friedrich-Universität Bamberg, Germany, demonstrate how tree-based Machine Learning techniques can be applied to small area estimation.

In the Book and Software Review section, Mamadou S. Diallo from the Saudi Center for opinion Polling (SCP), Saudi Arabia, presents SAMPLICS, a library for survey sampling in Python. It includes techniques of sampling, weighting and estimation, including small area estimation among other methods. It is followed by a review of the Handbook of Web Surveys, a book by Silvia Biffignardi and Jelke Bethlehem presented by Gaia Bertarelli from the EMbeDS Department, Institute of Management, Sant'Anna School of Advanced Studies, Pisa (Italy).

Then follows the country reports, the list of upcoming conferences and recently published articles in various journals. We would like to express our many thanks to the section editors for their attentive and timely work. In particular, thank you to Natalie Shlomo for having updated the list of the country

representatives. This work resulted in 18 interesting country reports to the current issue of TSS. Thank you also to Peter Wright for editing these 18 country reports.

The health of *The Survey Statistician* depends on participation by many members. If you have any information about conferences, events or just ideas you would like to share with other statisticians – please do go ahead and contact any member of the editorial board of the newsletter.

The Survey Statistician is available for downloading from the IASS website at <http://isi-iass.org/home/services/the-survey-statistician/>.

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Letter from the President

Dear IASS Members,

In this letter I explain what the IASS strategy is and what it means for the members. The draft strategy was made available for comments of the IASS members with a deadline of 15 June 2022. Comments received have been incorporated and the revised version will be ratified by the IASS Assembly on July, 14th 2022 (link will be sent in due time).

The vision of the IASS is a world where good survey theory and practice provide governments, businesses and civil society with the information they need to make good decisions. The IASS motto “Promoting good survey theory and practice around the world” is a fundamental task to promote progress in our society.

In fact, the data production process is at the hearth of understanding phenomena and of decision making. Survey methods, sample designs, register based statistics, integration of new data sources and the resulting design-based, model-assisted and model-based statistics play a strategic role in it.

Our strategy to move towards this vision consider the survey statistician:

- as a researcher in Universities or in other Research Institutions and companies, teaching the discipline of statistics and survey methods
- as a professional, involved in the data collection process and in the analysis of survey data and statistics
- as a scholar/ young researcher, seeking for mentoring and advising from senior experts

We consider also that all of us are promoting the use of statistics in the public interest; and are interested in improving statistical literacy and understanding of how data collection and survey methods are pivotal elements. Indeed, they are of crucial importance in relation to the development or success of understanding phenomena and of decision making.

During our current strategic period of 2022-2023 we have two particular themes we are focused upon across all of our strategic objectives. The first is engaging our members to help us deliver these goals. We do this through several actions: increasing the contact and interaction with our renovated country representatives, supporting local conferences, as well as regular communication with members, also via Twitter and LinkedIn. The second cross-cutting theme we are working on is the rise of new survey methods and integration of data sources and what it means for our work and that of survey methodologist. For this we are promoting and organizing the IASS Webinar series. They are open to the wide public and treat the emerging issues in survey sampling and survey data analysis.

Obviously, there are a wide range of views about what new survey methods and data integration is and its implications - the EC IASS took a clear view that we should be as inclusive as possible. In particular there are new challenges for survey statisticians in analysing large unstructured datasets via machine learning and data analytics, but equally there are specific and analytical skills which survey statisticians bring to the discussion which not all those coming to 'data science' may be familiar with. Uncertainty in data collection and sources of errors, measuring errors and selection bias, profiling the quality of collected data, sampling designs applied to reduce datasets dimensionality ...just to cite some of them.

In spite of being a relatively small organisation, we hope to have a big impact. The only way we can achieve this is by having you, our members, involved. That's why we've decided to disseminate this

letter and the report from the Scientific Secretary- to showcase all of the work we have done in the first months of 2022 and what we are doing together through the Association.

You can view and download our draft strategy to finalize during the July IASS Assembly here (<http://isi-iass.org/home/wp-content/uploads/Draft-IASS-Strategy-2022.pdf>)

With my best wishes,

Monica Pratesi

IASS President



Report from the Scientific Secretary

I have been appointed Scientific Secretary of IASS during the first meeting of the newly elected IASS EC in September. I am very grateful to the members of the EC for their trust, and I am indebted to James Chipperfield for his legacy on this role. As my first duty, I had to choose a topic for the

The past months have been busy with drafting the strategic plan of the IASS as illustrated in the letter from the President. This activity has involved all members of the EC and has helped us to have a clearer insight on the goals of our Association and to better tailor our activities in order to achieve them. On a personal side, the past months have also been busy with the organization of the IASS supported conference **ITACOSM-2022** held in Perugia (Italy) on June 8-10. The 7th biannual ITALian Conference on Survey Methodology has had a focus on Survey Methods for Statistical Data Integration and New Data Sources and has involved 101 registered participants from all over the world, among which 72 IASS individual members or affiliates of an institutional IASS member. The program has been very rich and featured three keynote presentations by Prof. Jae-Kwang Kim (Iowa State University), Anne Ruiz-Gazen (Toulouse School of Economics) and Peter Van Der Heijden (Utrecht University and University of Southampton), 36 invited papers and 30 contributed papers. Prof. Kim also delivered a truly insightful one-day short course on data integration methods on June 7. The conference has been the first occasion after the pandemic for many survey statisticians to gather again in person and to look more deeply into all those research topics that we are so passionate about.

I noticed that a good number of talks at the conference had a focus on the use of machine learning methods for survey estimation, and these came both from researchers in the Academia and at National Statistical Institutes. This has reassured me in the choice I had made for the topic for the **New and emerging methods** section of this issue of *The Survey Statistician*. I am very grateful to Prof. Patrick Krennmair and Nora Würz (Freie Universität Berlin) and to Prof. Timo Schmid (Otto-Friedrich-Universität Bamberg) for having accepted my invitation to write a paper on **Tree-Based Machine Learning in Small Area Estimation**.

Small area estimation methods are fundamental to obtain estimates of the spatial distribution of socio-economic indicators when direct estimates from survey data are not reliable because of a small domain sample size. The contribution relaxes the assumption of a linear relationship between the covariates and the variable of interest in unit level small area models by means of random forests. In addition, it accounts for hierarchically dependent data extending random forests to include area random effects. The method is illustrated using open-source income data from Austria. Please, contact me if you are interested in writing an article for the “New and emerging methods” of future editions of *The Survey Statistician*.

This issue of *The Survey Statistician* also features a contribution of our President Elect, Prof. Natalie Shlomo (Univ. of Manchester), in the **Ask the Expert** section on “**How to Measure Disclosure Risk in Microdata?**”. In particular, Prof. Shlomo distinguishes between microdata released from social surveys that have undergone statistical disclosure control methods and synthetic microdata generated from statistical modelling.

The organization of the monthly **Webinar series** has continued, and we are particularly thankful to Andrea Diniz da Silva for her engagement. We have now reached Webinar number 18 and we are happy to have made it a monthly appointment that has attracted an audience of up to three hundred registered participants. Please, visit the webinar section of our website <http://isi-iass.org/home/webinars/> for slides, that of ISI <https://www.isi-web.org/events/webinars> for upcoming

and recorded webinars, and contact Andrea andrea.silva@ibge.gov.br if you have suggestions for topics and/or speakers for the upcoming Webinars. Those held in the first six months of 2022 have covered inference from non-probability samples through data integration and using model-based methods, approaches for combining data from multiple probability samples, three-form split questionnaire designs for panel surveys, and spatial sampling and geospatial information for monitoring agriculture. In addition, a special IASS Webinar was held on May 25th in **memory of Prof. Jean-Claude Deville**: Prof. Alina Matei (Univ. de Neuchâtel) gave an insightful introduction to the life and research of Prof. Deville, while Prof. Camelia Goga (Univ. de Bourgogne Franche-Comté) gave a talk on recent advances of calibration estimation in a high dimensional setting and Prof. Yves Tillé (Univ. de Neuchâtel) discussed a new method for statistical matching that uses calibration and highly stratified balanced sampling. This initiative paired that organized at the ITACOSM conference where one invited session has been in memory of Prof. Jean-Claude Deville with talks by Prof. Changbao Wu (University of Waterloo) on new developments of calibration, by Dr. Francesco Pantalone (University of Southampton) on recent advances of balanced sampling, and by Prof. Guillaume Chauvet (ENSAI) on bootstrap methods for variance estimation. Prof. Yves Tillé (Univ. de Neuchâtel) has chaired and discussed the session that aimed to be a homage to a milestone researcher in survey sampling and estimation methods as well as a great man.

One upcoming Webinar in the Fall will be devoted to the first winner of the recently established **Biennial Hukum Chandra Memorial Prize**. The prize will be awarded by the end of July to a mid-career researcher, defined as someone with more than 10 years of experience after PhD or in employment, who has made an important contribution in research areas of Hukum Chandra's work, namely, survey sampling, small area estimation, official statistics, spatial analysis applied to official and survey statistics and agricultural statistics. The definition of a mid-career researcher in this call aims to recognize researchers who are close to Dr Chandra's career trajectory. The IASS prize committee has been appointed by the IASS EC and is composed by Nikos Tzavidis (Univ. of Southampton and member of the IASS EC), Alina Matei (Univ. de Neuchâtel), David Haziza (University of Ottawa), and Aberash Tariku (Ethiopian Statistics Service). Please follow the updates on this and on the life of IASS reading our **monthly Newsletter**. Other than webinars, information on conferences, on the recipients of awards and on call for nominations, it now features a new **book of the month** section. Please, feel free to contact me for news and info to be added in the Newsletter by the 15th of each month.

Maria Giovanna Ranalli

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IASS Scientific Secretary

News and Announcements

Award



Small Area Estimation Outstanding Contribution Robert E. Fay of Westat has been awarded the 2022 Award for Outstanding Contribution to Small Area Estimation (SAE), which was presented at the 2022 SAE conference in May. The award recognises contribution to the research, application, and education of SAE. Previous awardees are J.N.K. Rao, Danny Pfeffermann, Malay Ghosh, Partha Lahiri, and Wayne Fuller.

The 64th ISI World Statistics Congress



The International Statistical Institute will be holding the 64th World Statistics Congress in Ottawa, Canada from July 16th to July 20th, 2023. The World Statistics Congress is a unique opportunity to share information, meet friends and colleagues and increase networks. The conference hopes to see many IASS members participating in the event. More information can be found at: [64th ISI World Statistics Congress - Ottawa, Canada | ISI \(isi2023.org\)](https://www.isi2023.org).

Conference report - Conference in Honour of Fred Smith & Chris Skinner, 7-9 July 2021



The IASS satellite meeting of the 2021 World Statistics Congress was hosted by the University of Southampton in association with the London School of Economics and Political Science (LSE) for a Conference in honour of Fred Smith and Chris Skinner, two giants of the survey world who passed away close together in winter 2019/20 (you can find their obituaries at <https://rss.onlinelibrary.wiley.com/doi/full/10.1111/rssa.12580> and <https://rss.onlinelibrary.wiley.com/doi/pdf/10.1111/rssa.12600> respectively), and who both spent large portions of their careers at Southampton. The conference was connected with submissions for a special issue of the Journal of the Royal Statistical Society, Series A, which will appear in due course once the review processes have concluded.

The conference opened with a series of short reminiscences of Fred and Chris, led by Tim Holt, and containing many moving memories of the kindness, patience and questioning nature which characterised the contributions of Fred and Chris to academic life in the widest sense. This session was recorded, and is available on-line at <to follow>. Many other contributors to the conference provided stories in their own sessions, too, but these were not recorded.

There was a series of invited talks from many of those who had worked with Fred and Chris, led off by Danny Pfeffermann, who reviewed time series modelling for longitudinal data, starting from the work of Fred Smith. Chris Skinner made it onto the programme of the conference thanks to some joint work with Natalie Shlomo on measuring re-identification risk in microdata, and there was a contributed session devoted to papers on statistical disclosure control, a research area where Chris was an international leader. Jae Kwang Kim and Jon Rao finished the invited sessions on day 1 with methods for analysis of clustered data obtained by two-stage informative sampling.

At the beginning of the second day, David Steel and Ray Chambers, both of whom spent time in Southampton, presented papers in an invited session from Australia, on sample design for analysis using high influence probability sampling; and weighting, informativeness and causal inference respectively. Graham Kalton reviewed the history of probability and nonprobability sampling, and Wayne Fuller (who had just turned 90) presented a paper on post strata based on sample quantiles.

Chris Skinner was awarded the Waksberg prize in 2019, and his family graciously donated the prize money to support a student competition. A good selection of entries was received, and congratulations to the winners Loveness Dzitiki, Caio Goncalves, Dehua Tao, Estelle Medous, Fernanda Lang Schumacher and Luiz Eduardo da Silva Gomes who all made excellent presentations at the conference (two in contributed sessions and the others in a special student session).

The final day began with a discussion session on the need for a system for dealing with statistical information requirements in the time of a pandemic, and how this could be set up and joined up. Dennis Trewin led the discussion, with contributions from Pedro Silva, David Steel and Len Cook. Two contributed sessions covered a wide range of topics, from cross-classified sampling (another

topic where Chris Skinner had undertaken some research) to the use of neural networks and random forests in survey sampling and estimation.

The final session consisted of papers by Denise and Pedro Silva, who were PhD students under Fred and Chris respectively. Denise talked about compositional analysis of labour force status in the Brazilian LFS, and Pedro about fitting multilevel models under informative sampling.

The online format meant that many people joined the conference at awkward times of their day, and the organisers really appreciated the efforts of those who got up early and stayed up late to attend a wide range of sessions. It was great to have an opportunity to meet up with old and new friends, and even to have some discussions in the breaks in the programme. We would like to thank everyone who contributed to making the conference a success, and look forward to a time when we can all gather again face-to-face.

Paul Smith & Peter Smith
University of Southampton

Conference report - Day-long virtual conference on latest developments in the theory and practice of sample surveys and censuses organized by Pak Institute of Statistical Training and Research (PISTAR) on March 12, 2022

The Pak Institute of Statistical Training and Research (PISTAR) organized a day-long virtual conference on “Latest Developments in the Theory and Practice of Sample Surveys and Censuses”. on Saturday, March 12, 2022 followed by a post-conference workshop on Utilization of Remote Sensing in Sample Surveys and Censuses on Sunday, March 13, 2022. Both the conference and workshop were sponsored by the International Association of Survey Statisticians (IASS).

The first session comprised an invited talk by Mr. Isaac Shahzad on behalf of the Director General, Bureau of Statistics, Punjab, Pakistan. He described basics of sampling terminologies and various methods of random and non-random sampling, household sampling techniques. There were then many sessions on topics such as neural network calibration in surveys as well as other calibration methods, measuring adoption rates, measuring crime rates and use of GIS in agriculture.

There was a presentation by Ms. Rabia Awan on behalf of Mr. Muhammad Sarwar Gondal, Member, Pakistan Bureau of Statistics (PBS) on the 7th Population & Housing Census, the first-ever digital census of Pakistan.

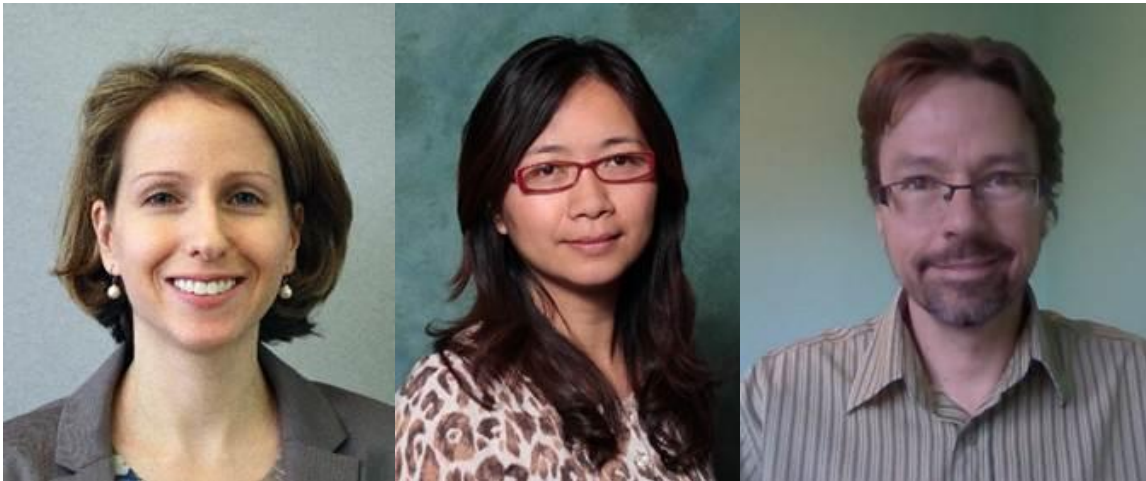
One of the highlight sessions featured Prof. Jae-Kwang Kim from Iowa State University, USA, Prof. Li-Chun Zhang from the University of Southampton in UK / Statistics Norway / University of Oslo, Norway as well as Dr. Zhonglei Wang from the Wang Yanan Institute for Studies in Economics and the School of Economics, Xiamen University, China. They presented on graph sampling, calibration for non-probability surveys, and correction of selection bias.

Prof. Monica Pratesi, President, International Association of Survey Statisticians, presented her keynote address. She discussed in detail the scope, the working, the activities and the progress of IASS.

The event also included the announcement of winners for the Best Research Paper Competition as well as winners of Best Poster Competition.

Morris-Hansen Lecture

On March 1, the Washington Statistical Society held its 29th annual Morris-Hansen Lecture Series. The theme of the event was: Working with Non-Probability Samples: Assessing and Remediating Bias. The speakers were Courtney Kennedy, Director of Survey Research, Pew Research Centre; Yan Li, Joint Program in Survey Methodology, University of Maryland; Jean-François Beaumont, Senior Statistical Advisor, Statistics Canada. Courtney Kennedy presented on: Exploring the Assumption That Online Opt-in Respondents Are Answering in Good Faith. Yan Li presented on: Exchangeability Assumption in Propensity-Score Based Adjustment Methods for Population Mean Estimation Using Non-Probability Samples. Jean-François Beaumont presented on: Reducing the bias of non-probability sample estimators through inverse probability weighting with an application to Statistics Canada's crowdsourcing data.



C. Kennedy

Y. Li

J.F. Beaumont